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## Worldview-Based Scenarios Highlight Stakeholder Values and Assumptions

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## *Appendix 6: Case Study on Worldviews and Scenarios*

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In lake management, we have the privilege and responsibility to work with the public on highly visible resources. Everybody has an opinion based on his or her personal values and observations. While we might sometimes consider this plethora of value statements as the bane of our existence, we all realize that public engagement is crucial for the health and future of lakes. Poor lake health is often caused by many little insults that stem from a wide range of legitimate views for how the lake should be treated as a resource. We need a framework to be able to deal with these differing values and assumptions for how lakes should be managed.

Many of the issues ~~that arise in lakes~~ are best described as “wicked problems” (Norton 2005). These types of problems contain dimensions of knowledge/uncertainty and some conflict between individual versus community values. Wicked problems don’t have any solution but rather, require continuous adaptation and engagement. Wicked problems require new knowledge or understanding and to deal with community values. These values are not static but will likely shift as more information becomes available. For example, more information on environmentally-friendly lake restoration approaches might sway some people to favor green infrastructure over traditional engineering approaches. Wicked problems require a constant negotiation between the present and the future, with all the philosophical hazards that entails.

Our best hope for constructive engagement with wicked problems is to employ scientific and adaptive management. To do this we will need to make decisions based on evidence and we will have to treat values objectively (Norton 2005). Scientific adaptive management (Table 1) (as defined by the Department Of Interior) includes dealing with uncertainty and the degree of control that we have over implementation. At the beginning of a project we are dealing with a situation in which we have low control (because we are just staging the problem) and a large degree of uncertainty. In these situations, scenarios are a good place to start. We can use scenarios to identify the assumptions and explore some possible future

outcomes. Whereas scientific adaptive management is a rigorous process for designing management actions as experiments, creating scenarios is a community-oriented process that strives to bring in as many opinions and assumptions as possible. Optimal project management has more technocratic control and would follow after all the value-laden issues have been resolved. In order to begin constructing valuable scenarios we need to be able to unwrap value assumptions from the community and address these values objectively, which we do by discussing the values directly rather than judging the validity of the values.

Table 1. Scientific adaptive management in the landscape of control vs. uncertainty (Williams et al. 2009).

	High control	Low control
Sufficient knowledge	Optimal project management	Hedging/ diversification
Uncertainty	Scientific Adaptive Management	Scenarios

Values are intertwined with how we think the world operates, critical thinking skills that we employ, and the knowledge we seek to make meaning. You might want to have all decisions based on objective data but that is not how the rest of the non-scientific world operates. According to Culture Theory (Thompson et al 1990, Elis and Thompson 1997)), there are five dominant combinations of values and critical thinking that represent self-reinforcing and internally consistent sets. (It is beyond the scope of this article to discuss how and why there are only five.) These are called “worldviews” and they stem from myths of nature, beliefs about how people should interact with each other and views of uncertainty (van Asselt and Romans 1996, 2002). The five dominant worldviews are described in Table 2 and salient phrases that you might hear from holders of each worldview (Table 3). You will probably recognize these types of statements from public discussions about lake management.

Table 2. Worldviews, key beliefs, and assumptions. A summary of some of the major differences between worldviews as they pertain to management of environmental projects is provided. Blank cells indicate that it is not clear for this category.

Name (Also known as)	Myth of Nature	Preferred action	Sustainability	Technology	Other
Individualists (Cornucopian)	Nature is independent of human activities	Take advantage of new opportunities using market forces	"Weak" – all capital is convertible	Optimistic	Individual and property rights
Hierarchists (Accommodating, Industrial ecologists)	Nature is robust and will recover	Control comes from well structured regulations	Most capital is convertible	Green economy and efficiency, use market incentives or taxes	Green economy, Instrumental value for nature
Egalitarian (Sectarians, Communalists, Committed environmentalists)	Nature is fragile and must be protected	Prevention, prudence and precaution	"Strong sustainability", i.e. that natural capital has special	Use to preserve resources	Collective interests take precedence over individual interests
Fatalist (1) (Technology skeptics)	-----	No erosion of <i>status quo</i> for stakeholders	Restoration needed first	Pessimistic or skeptical of technology's potential	Fix what you have first
Fatalist (2) (Deep ecologists)	Nature has rights equal to those of humans	Severely limit any resource take	"Strong sustainability", natural capital must be preserved	Must be curtailed if it impacts natural systems	Broad definition of rights that includes animal, plant and earth

It doesn't always take surveys or sophisticated sociological research to uncover the range of values in a community. What is required is to listen for statements that are characteristic or indicative of the above worldviews. Clear examples of these value-laden worldviews were evident at a recent workshop that was organized to address the technical and economic feasibility of different forms of restoration for Upper Klamath Lake (Stillwater Sciences et al, 2013). Even engineers, consultants and managers have underlying worldviews that can be unwrapped and treated objectively. An example of proponents and salient statements is presented in Table 3. Although some viewpoints may be dominant in different forums, even a heavily

technical session such as this had the full representation. In this sense the worldviews have a heuristic value in that they help us scan the discourse and listen for proponents of all worldviews and make sure that they are heard and acknowledged.

Table 3: Statements from representatives of different stakeholder groups and salient worldview phrases.

The statements from a representative of a tribal organization were very close to the “Deep Ecologist” world view, i.e. that restoring the system to a natural state more like pre-European influence levels would lead to a system that was self-regulating and healthy.

A university professor presented ideas for restoring ecosystem functioning and “ecological engineering” that are similar to the “Egalitarian” worldview. In particular the idea that dramatic increases in energy costs should be considered and avoid those strategies that will require a high allocation of energy. This is the precautionary principle and is characteristic of the Egalitarian worldview.

A representative from USGS remarks were close to the “Hierarchist” view, especially when he suggested that we identify the cause and work to eliminate the effect. Assuming that there is an identifiable cause and that industrial scale efforts are the most efficient approach is a characteristic of the Industrial Ecologist worldview.

Someone who works with USDA was the closest to stating a “Individualist” worldview. He said that the ranchers have faced problems and always been able to solve them. He stated that respecting individual property rights is crucial to get any project to be successful.

Creating and discussing future scenarios is a valuable exercise that can engage the community in possible approaches. Americans hold a range of philosophical views for the future, ranging from the perception that the future won’t change the current state of things to the perception that the future will have unforeseen consequences. Most people are in between and consider that the future will only change incrementally and that there will be substantial continuity. It is important to remember that the general public’s view of change is very simple compared to current theories in academics which focus on post-modernity (future will be different with no authority)(\*\*modernity ref) to second-modernity (second modernity ref \*\*) (the future will be different in ways we can’t even understand or predict). These academic and philosophical views of the future are unsettling to the public and do not engender trust in the process. I call my view of the future “retro-modernity”. “Retro-modernity” is the only version of the future that we can discuss and build trust with stakeholders because it is dominated by features and processes

that people are currently familiar with (and thus trust)(\*\* trust reference), but those features and processes will be repurposed, rearranged and re-proportioned. Dystopic futures will not build trust and cooperation but will heavily favor a turn toward skepticism and fatalism. Scenarios should be constructed in a way that makes all options seem as attractive as possible, and thus bring the most people into the conversation at an early stage.

I constructed a set of scenarios and worked with an artist (Lindsay Jordan – \*\* in acknowledgements) to turn them into pictures of what the city of Klamath Falls lakefront would look like under different worldviews. Each picture depicts the same scene with features that are characteristic of each worldview. When I have shown these to people familiar with Upper Klamath Lake and the city of Klamath Falls, they recognize all of the components and see the overall scenario as being a reasonable prediction for what the lake and community might look like in the future.



Figure 1. “Economic Renaissance”: the individualist’s view. The key features in this drawing are the predominant building in the city that represents financial success, the large operation farm that relies on capital equipment and feedlots and the lake has utilitarian value for both irrigation and waste disposal. \*\* more description of each

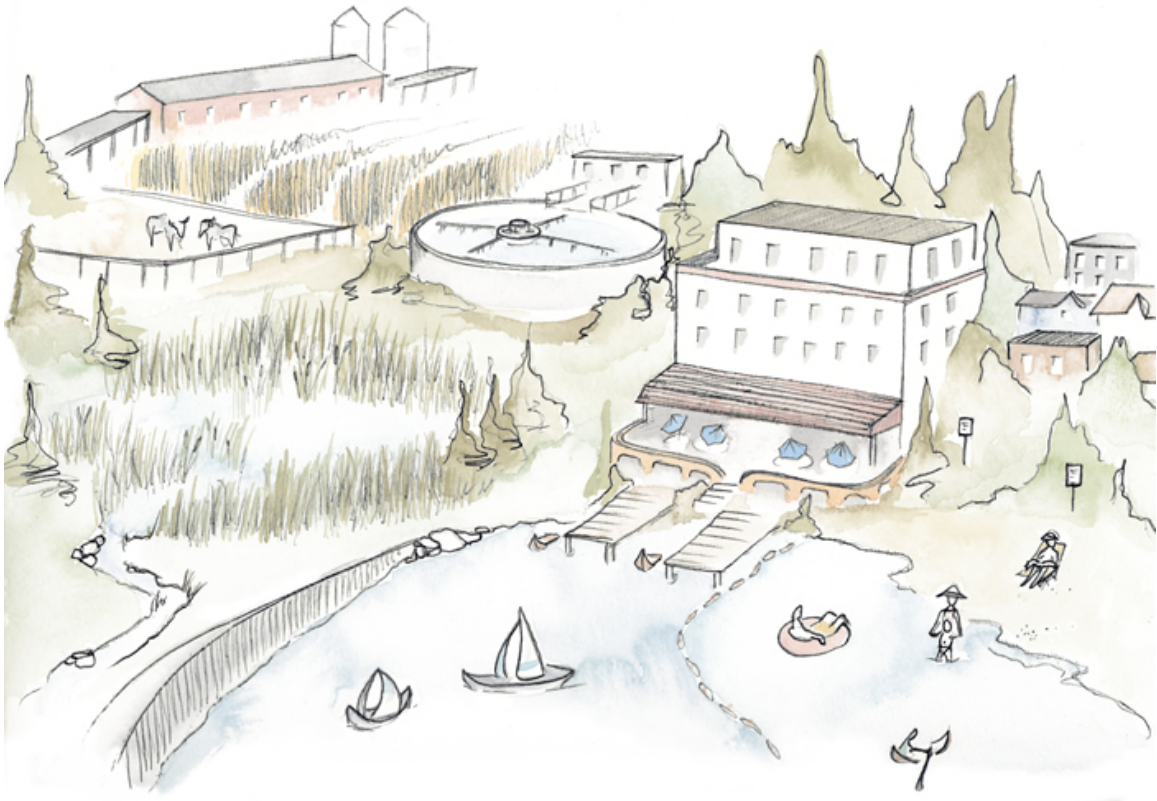


Figure 2. "Expert Lake Management": the hierarchist's view. The key features of this drawing are the orderliness, the tertiary treatment plant to handle all human wastes, the buffer between farms and the lake to protect the lake, the inviting waterfront with clean water for swimming and the café for enjoying the clean and well-managed lake. The signs on the beach are also indicative of the belief that the public will read and obey signs.



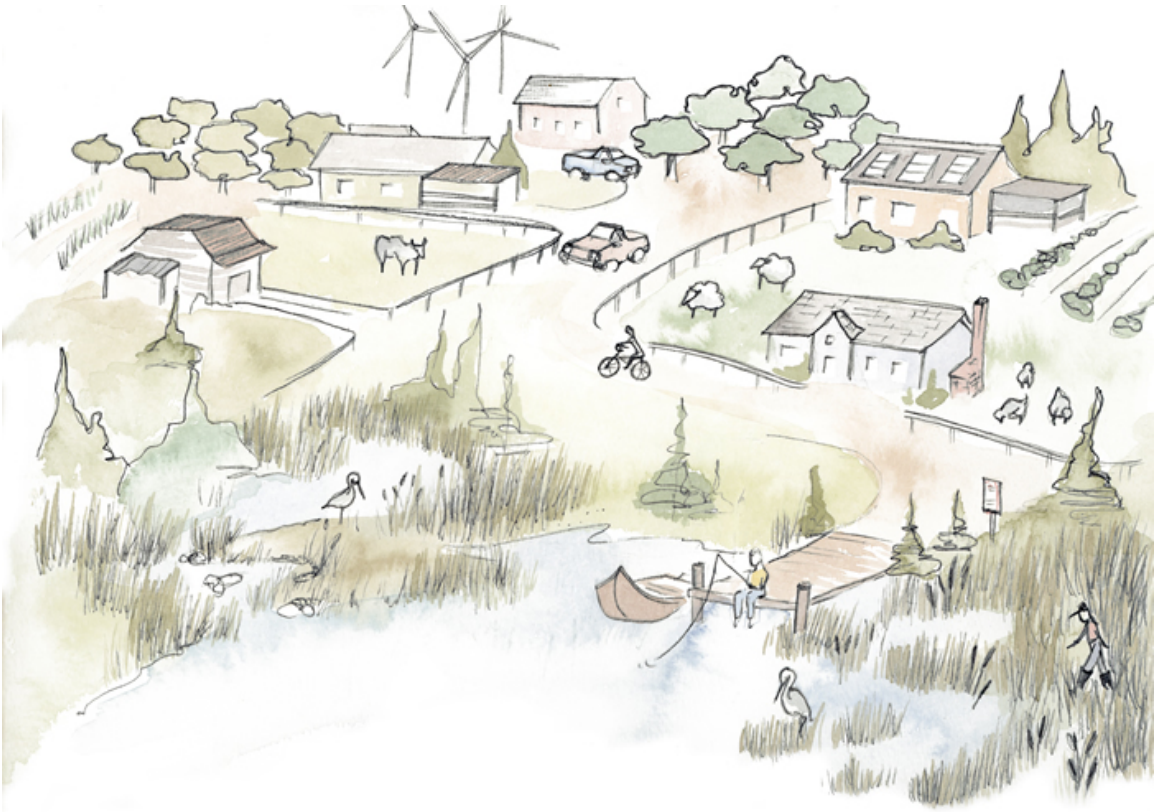


Figure 3. "Mosaic Community": the egalitarian's view. This community is a patchwork of small farms and natural capital drawing on ecosystem services. Although the farms might be small they are employing high technology (solar and wind power). The range of crops and livestock illustrate the interconnectedness and desire for self-sufficiency in the community. The sign on the dock probably proclaims that this is a community area with the assumption that people would know to keep it clean for others.





Figure 4. "Return to Nature": the deep ecologist's view. This image illustrates a verdant scene that would fit with this vision. The shoreline is dominated by plant growth. The farms are probably small-scale with very light footprint on the environment. Deep ecology is often associated with a "hermit" lifestyle that retreats from public involvement. However, in the Klamath Falls region, a deep-ecology worldview is a strong statement of a holistic view that has interdependent ecosystem, ecology and social sub-systems.



Figure 5. "We like what we have": the fatalist/skeptic's view. This image represents that the community has created an oasis in one area and not tried to restore or preserve the whole area. In the fatalist's view, massive restoration is not possible and we shouldn't waste our effort and resources on lost causes. Instead, we should nurture a select area and make it as nice as possible and make sure that everything inside the fences is in working order.

Seeking for the input of stakeholders holding different worldviews is an important pluralistic process that supports liberal democracy. Rather than being a distraction, it is important to get a wide range of input early in the process in order to avoid surprises and traps in lake restoration projects (Gunderson and Hollings 2002). The creation of attractive future scenarios can help stimulate discussions. I used an artist to condense many features into one panel and to focus the attention on a single location. However, pictures of similar lakes with different outcomes would have also been useful. You could use images of the shores of lakes in different regions that have either addressed the problem or have let the problem fester. Focusing on attractive versions of the future, rather than the fear of cataclysms, will also help build trust and engagement. Fear, and especially the fear of losing current status, (\*\*ref from Bulloghs pond) can be counter productive and often leads to fatalistic, self-protective, and non-democratic behaviors. The discussions of the lake's future and how civic cooperation is necessary is an exercise in environmental stewardship that can improve overall community governance. Even though the challenges of lake

restoration may be a wicked problem, the invitation and engagement of a range of worldviews is necessary work that can lead to a better future.

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\*\*Trust – only what is recognizable